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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/669,006

09/24/2003

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65933-043

1802

7590

05/08/2006

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EXAMINER

SHAPIRO, LEONID

ART UNIT

PAPER NUMBER

2629

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |  |                     |  |
|------------------------------|------------------------|--|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> |  | <b>Applicant(s)</b> |  |
|                              | 10/669,006             |  | NOGUCHI ET AL.      |  |
|                              | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                              | Leonid Shapiro         |  | 2629                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10-23-03</u>  | 6) <input type="checkbox"/> Other: _____                                    |

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of claim 17: "display region constituted by a plurality of pixel circuits are divided into sub-regions, and the plurality of display control circuits pixel circuits control the plurality of pixel circuits at separate timing for each of sub-regions" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The limitation of claim 17: "display region constituted by a plurality of pixel circuits are divided into sub-regions, and the plurality of display control circuits pixel circuits control the plurality of pixel circuits at separate timing for each of sub-regions" is not described in the Specification.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 17 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear, what is the separate timing for each of the sub-regions without being disclosed in the Figures or Specification?

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3,5-6,8,18,20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US Patent No. 5,789,766) in view of Kuriyama (US Patent No. 6,030,548).

As to claim 1, Huang et al. teaches a display apparatus (See Col. 1, Lines 6-9), including:

a pixel circuit (See Fig. 1, item 12);

a display control circuit which controls said pixel circuit (See Fig. 1, items 14-15, Lines 46-61); and

wherein said pixel circuit, said display control circuit are formed by a stacking process (See Col. 2, Lines 24-28 and from Col. 8, Line 57 to Col. 9, Line 11).

Huang et al. does not disclose a supply region for supplying a predetermined voltage used to drive said pixel circuit and at least part said display control circuit overlaps with said supply region stacking direction thereof.

Kuriyama teaches a supply region for supplying a predetermined voltage used to drive said pixel circuit and at least part said display control circuit overlaps with said supply region stacking direction thereof (See Col. 3, Lines 51-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Kuriyama into Huang et al. system in order to reduce size (See Col. 3, Lines 65-67).

As to claim 5, Huang et al. teaches a display apparatus (See Col. 1, Lines 6-9), including:

a pixel circuit (See Fig. 1, item 12);

a display control circuit which controls said pixel circuit (See Fig. 1, items 14-15, Lines 46-61); and

wherein said pixel circuit, said display control circuit are formed in a plurality of stacking layers (See Col. 2, Lines 24-28 and from Col. 8, Line 57 to Col. 9, Line 11).

Huang et al. does not disclose a supply region for supplying a predetermined voltage used to drive said pixel circuit and at least part said display control circuit overlaps with said supply region stacking direction thereof.

Kuriyama teaches a supply region for supplying a predetermined voltage used to drive said pixel circuit and at least part said display control circuit overlaps with said supply region stacking direction thereof (See Col. 3, Lines 51-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Kuriyama into Huang et al. system in order to reduce size (See Col. 3, Lines 65-67).

As to claim 2-3, Huang et al. teaches pixel circuit is arranged in a matrix so as to form a display region, and said display control circuit outputs a data signal in a column direction thereof and a selection signal in a row direction thereof (See Fig. 1, items 12,14-15, Lines 46-61).

As to claims 6, 8 Huang et al. teaches display control circuit (in the reference column driver) which inherently includes at least one of a shift register, a buffer and a switching circuit (See Fig. 1, item 14-15) and Kuriyama teaches wherein the least one element is formed such a manner as overlap with said supply region supplying the predetermined voltage (See Col. 3, Lines 51-67).

As to claims 18, 20 Huang et al. does not disclosed OLED as an optical element. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use OLED instead of LED in Huang et al. system as optical element.

5. Claims 4,7,9-13,15-16,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Kuriyama and Sasuga et al. (JP 2001-255515).

As to claim 4, Huang et al. teaches a display apparatus (See Col. 1, Lines 6-9), including:

a display region in which a plurality of pixel circuit are arranged in a matrix (See Fig. 2, item 16);

a display control circuit, disposed outside display region, which which controls said pixel circuit (See Fig. 2, items 17-18, from Col. 3, Line 62 to Col. 4, Line 5 ); and

wherein said pixel circuit, said display control circuit are formed by a stacking process.

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Huang et al. does not disclose a supply region for supplying a predetermined voltage used to drive the plurality of pixel circuits and at least part said display control circuit overlaps with said supply region stacking direction thereof.

Kuriyama teaches a supply region for supplying a predetermined voltage used to drive the plurality of pixel circuits and at least part said display control circuit overlaps with said supply region stacking direction thereof (See Col. 3, Lines 51-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Kuriyama into Huang et al. system in order to reduce size (See Col. 3, Lines 65-67).

Kuriyama and Huang et al. do not disclose a connecting member which electrically connects the display apparatus to an external unit, so as to introduce a signal to be referred to by said display control circuit and the predetermined voltage.

Sasuga et al. teaches a connecting member which electrically connects the display apparatus to an external unit, so as to introduce a signal to be referred to by said display control circuit and the predetermined voltage (in the reference: "a connector connected with external device) (See Solution in Sasuga et al. reference).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Sasuga et al. into Kuriyama and Huang et al. system in order to lower manufacturing cost (See Problem To Be Solved in Sasuga et al. reference).

As to claim 7 Huang et al. teaches display control circuit (in the reference column driver) which inherently includes at least one of a shift register, a buffer and a



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switching circuit (See Fig. 1, item 14-15) and Kuriyama teaches wherein the least one element is formed such a manner as overlap with said supply region supplying the predetermined voltage (See Col. 3, Lines 51-67).

As to claim 9 Huang et al. does not disclose luminance, clock and start signals. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use luminance, clock and start signals in Huang et al. system as in any LCD system.

As to claim 10, Sasuga et al. teaches electrically connecting member is an external input terminal (See Solution) and Kuriyama teaches wherein said supply region supplying the predetermined voltage formed in such a manner as overlap with said display control circuit (See Col.3, Lines 43-67).

As to claims 11, 16 Kuriyama teaches at least part of a region, in which signal to be referred to is interconnected, is formed in a such manner as to overlap with supply region supplying the predetermined voltage (See Col. 3, Lines 51-67).

As to claim 12, Sasuga et al. teaches plurality of connecting members are provided in the periphery of the display apparatus (See Solution), and Kuriyama teaches a plurality of display control circuits are provided according to the number of connecting members, the number of the signals be referred to and a region thereof be interconnected are determined according to the number of said connecting members and display control circuits, and wherein said connecting members, the display control circuits, supply region are formed in a manner such that at least part of the plurality of said display control circuits and the wiring region for the plurality of signals to be

referred overlapped with said supply region in layers from the plurality connecting members up to said display region (See Col. 3, Lines 51-67).

As to claim 13, Sasuga et al. teaches connecting member is provided on either above or below the display apparatus (See Solution).

As to claim 15, Huang et al. teaches positions and layout of the plurality of connecting members, the plurality of interconnection for the signals to be referred and the plurality of display control circuits are arranged a manner such that vertical and horizontal symmetry is maintained See Fig. 2, items 17-18).

As to claim 19 Huang et al. does not disclosed OLED as an optical element. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use OLED instead of LED in Huang et al. system as optical element.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al., Kuriyama and Sasuga et al. as applied to claim 12 above, and further in view of Murofushi (US Patent No. 6,332,690 B1).

Huang et al., Kuriyama and Sasuga et al. do not disclose connecting member is provided on both left and right side of the display apparatus, and each of the thus provided connecting members includes a power supply terminal of anode and cathode.

Murofushi connecting member is provided on both left and right side of the display apparatus, and each of the thus provided connecting members (See Fig. 3, items 16, Col. 3, Lines 37-61).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Murofushi into Sasuga et al., Kuriyama and Huang et al. system in order to display picture without suffering from non-uniform characteristic (See Col. 1, Lines 32-35 in Murofushi reference).

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al., Kuriyama and Sasuga et al. as applied to claim 12 above, and further in view of Hirota (US Patent No. 6,552,705 B1).

Huang et al., Kuriyama and Sasuga et al., as best understood by examiner, do not disclose display region constituted by a plurality of pixel circuits are divided into sub-regions, and the plurality of display control pixel circuits at separate timing for each of the sub-regions.

Hirota teaches display region constituted by a plurality of pixel circuits are divided into sub-regions, and the plurality of display control pixel circuits at separate timing for each of the sub-regions (See Fig. 1, items 1-31, Col. 1, Lines 53-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Hirota into Sasuga et al., Kuriyama and Huang et al. system in order to display high quality images (See Col. 2, Lines 57-60 in Hirota reference).

***Telephone Inquire***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LS  
05.05.06



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